



Blood Collection

Commercial Benefits—Spinoffs

Space travelers experience many physiological changes as they orbit Earth. An astronaut's body, once free of a 1-gravity pull, experiences a redistribution of body fluids. Proportionately more blood surges through the head, neck, and chest. Blood plasma volume is affected, and the number of red blood cells eventually decreases, leading to a form of space anemia. These effects and others are under study by NASA physicians to better appreciate how the human body reacts and adapts to microgravity and then readjusts to the Earth's gravity, once returned from space.

As part of these studies, NASA sought development of a device for the collection and real-time analysis of blood and other bodily fluids on missions without centrifugation. A method to collect and store such samples was invented by NASA and has been licensed to DBCD, Inc.,

of Webster, Texas. DBCD was formed in 1997 to commercialize the technology.

Under a patent licensing agreement from NASA, DBCD is now manufacturing a completely new range of blood separation products. These products incorporate the patented separation technology developed by NASA engineers. In May 1998, DBCD released its first product, the ProSeptor™, a blood drop device, and sales have begun. The ProSeptor™ 200, capable of collecting 150 microliters of serum, was also released.

The patented method and technology separate a relatively large volume of blood into cellular and acellular fractions without the need of a spinning centrifuge to accomplish this division. DBCD's ProSeptor™ products can provide serum or plasma from whole blood volumes of 20 microliters to 4 milliliters. These devices have a fibrous filter with a pore size of less than about 3 microns and are coated with a mixture of mannitol and plasma fraction protein. This coating causes the cellular fraction to be trapped by the small pores, leaving the cellular fraction intact on the fibrous filter. Meanwhile, the acellular fraction passes unaltered through the filter for

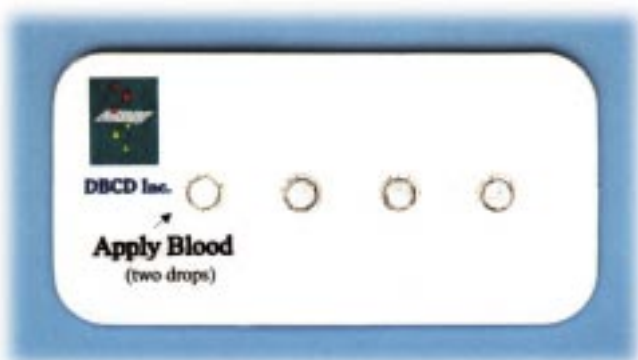
collection from the serum sample collection chamber.

DBCD devices permit the collection of serum, anywhere, anytime, and from any species. No longer are heavy centrifuges required to be transported to remote sites, nor do police detectives have to hurry back to a lab to avoid sample spoilage. Expensive overnight parcels can be replaced by using the DBCD equipment.

Now manufacturing a range of blood separation products, DBCD services include customizing a blood separation system for a customer's instrumentation. DBCD's processing separator system equipment allows a user to collect, in only seconds to minutes, quantities of serum/plasma from whole blood that are of excellent quality.

ProSeptor™ 200 is designed to collect around 150 microliters of serum from 0.5 milliliters of blood in a laboratory or remote setting. The serum, which is collected on an easily removed collector, can be squeezed off for immediate analysis, frozen, or dried for later study. An Express Pouch is a specifically designed plastic pouch with storage material incorporated. The ProSeptor™ device or collection layer of the ProSeptor™ 200 can be placed in this pouch to dry and then be mailed to the laboratory for later analysis.

"DBCD has had great response from the community, diagnostic companies, and distributors regarding our products," says Eden Fields, president of DBCD. "NASA provides a great environment for development of products that can be beneficial to society. This technology is a good example of such a project," Fields adds. ❖



DBCD, Inc., has developed portable blood collection products that separate blood without the need of a spinning centrifuge.



ProSeptor™ is a trademark of DBCD, Inc.